10/534144

JC06 Rec'd PCT/PTO 09 MAY 2005

Claims

- (original) A fuel injection valve for internal combustion engines, having a valve body (1) in which a bore (5) that is defined on its end toward the combustion chamber by a valve seat (18) is embodied, in which valve seat a first row of injection openings (20) and a second row of injection openings (22) are embodied, and the second row of injection openings (22) is closer to the combustion chamber than the first row of injection openings (20), and having an outer valve needle (8), which is located longitudinally displaceably in the bore (5) and which cooperates with the valve seat (18) to control the first row of injection openings (20), and between the outer valve needle (8) and the wall of the bore (5), a pressure chamber (14) is embodied that can be filled with fuel at high pressure, and having an inner valve needle (10), which is located longitudinally displaceably in an inner bore (11) of the outer valve needle (8) and which cooperates with the valve seat (18) for controlling the second row of injection openings (22), and having a pressure shoulder (30), embodied on the inner valve needle (10), by way of which shoulder, upon subjection to pressure, a hydraulic opening force is exerted on the inner valve needle (10), characterized in that the outer valve needle (8), as a result of its opening stroke motion, opens a throttle connection (32) from the pressure chamber (14) to the pressure shoulder (30) of the inner valve needle (10).
- 2. (original) The fuel injection valve according to claim 1, characterized in that the throttle connection is embodied as an annular gap (32) between the wall of the inner bore (11) and the inner valve needle (10).
- 3. (currently amended) The fuel injection valve according to claim 1 or 2, characterized in that in the outer valve needle (8), by means of a radial enlargement of the inner bore (11), a pressure vessel (27) is formed in which the pressure shoulder (30) of the inner valve needle (10) is located, and which can be made to communicate with the pressure chamber (14) by the throttle

connection (32).

- 4. (original) The fuel injection valve according to claim 3, characterized in that the pressure vessel (27) is defined by an annular shoulder (34) of the outer valve needle (8) that is oriented counter to the valve sealing face (35) of the outer valve needle (8).
- 5. (original) The fuel injection valve according to claim 1, characterized in that the inner valve needle (10), near the valve seat (18), has a guide portion (25) with which it is guided in the inner bore (11).
- 6. (original) The fuel injection valve according to claim 5, characterized in that facing away from the combustion chamber toward the guide portion (25) of the inner valve needle (10), a return conduit (28) is embodied between the wall of the inner bore (11) and the inner valve needle (10), by way of which conduit the pressure chamber (27) can be pressure- relieved.
- 7. (original) The fuel injection valve according to claim 6, characterized in that at least polished section (46) is embodied on the guide portion (25) of the inner valve needle (10).
- 8. (original) The fuel injection valve according to claim 5, characterized in that the pressure shoulder (30) of the inner valve needle (10) is embodied on the end toward the combustion chamber of the radially enlarged guide portion (25).